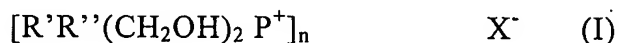


CLAIMS (article 19 PCT)

1. A method of treating sewage sludge to reduce the pathogen content of said sludge, the method comprising the steps of:

(a) adding to the sludge an effective amount of a phosphorus-containing compound, wherein the phosphorus-containing compound is a phosphonium compound, wherein the phosphonium compound is either:

- (i) a tetrakis(hydroxyorgano)phosphonium salt; or
- (ii) a compound of formula (I)



wherein:

n is the valency of X;

R' and R'', which may be the same or different, are selected from an alkyl, hydroxyalkyl, alkenyl or aryl moiety and X is an anion; or

wherein:

the phosphorus-containing compound is an alkyl-substituted phosphine as shown in formula (II):



wherein:

each R, which may be the same or different, is selected from an alkyl, hydroxyalkyl, alkenyl or aryl moiety; and

- (b) keeping the phosphorus-containing compound in contact with the sludge for sufficient time to reduce the amount of pathogens present in the sludge by an amount equivalent to a logarithmic reduction of 2 or more.
2. A method as claimed in claim 1 in which the log reduction of 2 or more is achieved over a 24-hour period.
3. A method as claimed in claim 1 in which the phosphorus-containing compound is kept in contact with the sludge for sufficient time to reduce the amount of pathogens present in the sludge by a log reduction of 3 or more.
4. A method as claimed in claim 3 in which the phosphorus-containing compound is kept in contact with the sludge for sufficient time to reduce the amount of pathogens present in the sludge by a log reduction of 4 or more.
5. A method as claimed in any one of the preceding claims in which the pathogens are bacteria.
6. A method as claimed in any one of the preceding claims in which the sludge has undergone anaerobic digestion prior to step (a).
7. A method as claimed in any one of the preceding claims in which R' and R'' are between 1 and 20 carbon atoms in length.
8. A method as claimed in any one of the preceding claims in which X is selected from the group consisting of chloride, sulphate, phosphate, acetate, oxalate and bromide.
9. A method as claimed in any one of the preceding claims in which the phosphonium compound is tetrakis(hydroxymethyl) phosphonium sulphate.

10. A method as claimed in any one of the preceding claims in which the phosphonium compound is selected from tetrakis(hydroxymethyl) phosphonium chloride, tetrakis(hydroxymethyl)phosphonium bromide, tetrakis(hydroxymethyl)phosphonium phosphate, tetrakis (hydroxymethyl) phosphonium acetate or tetrakis(hydroxymethyl)phosphonium oxalate.

11. A method as claimed in any one of the preceding claims in which the amount of phosphorus-containing compound to be added to the sludge in step (a) of the method of the present invention is up to 10000mg/l.

12. A method as claimed in claim 11 in which the amount of phosphorus-containing compound to be added to the sludge in step (a) of the method of the present invention is 100-2500mg/l.

13. A method as claimed in claim 12 in which the amount of phosphorus-containing compound to be added to the sludge in step (a) of the method of the present invention is 200-1000mg/l.

14. A method as claimed in any one of claims 1 to 10 in which the amount of phosphorus-containing compound to be added to the sludge is expressed relative to dry solids weight and the amount to be added is up to about 30% by weight of dry solids.

15. A method as claimed in claim 14 in which the amount of phosphorus-containing compound to be added is from 0.1 to 20% by weight of dry solids.

16. A method as claimed in claim 15 in which the amount of phosphorus-containing compound to be added is from 0.1 to 10% by weight of dry solids.

17. A method as claimed in claim 14 in which the amount of phosphorus-containing compound to be added is from 0.2 to 5% by weight of dry solids.
18. A method as claimed in claim 14 in which the amount of phosphorus-containing compound to be added is from 0.4 to 2% by weight of dry solids.
19. A method as claimed in any one of the preceding claims in which step (b) of the method of the present invention is carried out over a period of from 1 second to 14 days.
20. A method as claimed in claim 19 in which step (b) of the method of the present invention is carried out over a period of from 6 to 24 hours.
21. A method as claimed in claim 19 in which step (b) of the method of the present invention may be carried out over a period of from 15 seconds to 24 hours.
22. A method as claimed in any one claims 1 to 4 and claims 6 to 21 in which the pathogens present in the sludge are selected from the group consisting of bacteria, viruses, protozoans and helminths.
23. A method as claimed in claim 5 and 22 in which the bacteria are selected from the group consisting of *Escherichia coli*, *Salmonella spp.*, *Shigella spp.*, *Vibrio cholerae*, *Bacillus cereus*, *Listeria monocytogenes*, *Campylobacter spp.* and *Yersinia pestis*.
24. A method as claimed in claim 22 in which the viruses are selected from the group consisting of rotaviruses, calciviruses, group F adenoviruses and astroviruses.

25. A method as claimed in claim 22 in which the protozoans are selected from the group consisting of *Entamoeba spp.*, *Giardia spp.*, *Balantidium coli* and *Cryptosporidium spp.*

26. A method as claimed in claim 22 in which the helminths are selected from the group consisting of *Ascaris lumbricoides* (roundworm), *Trichuris trichiura* (whipworm), *Ancylostoma duodenale* (hookworm), *Strongyloides stercoralis* (threadworm), *Schistosoma spp.*, *Taenia saginata* (beef tapeworm), *Taenia solum* (pork tapeworm) and their eggs.

27. A sewage sludge that has been treated according to the method as claimed in any one of claims 1 to 26.

28. A method of treating sewage sludge substantially as described herein with reference to the accompanying examples and figures.

29. A treated sludge substantially as described herein with reference to the accompanying examples and figures.